


SWBAT

apply newton's second
law to problems with
friction

Sep 4-7:31 AM

SECA CP Physics
Wednesday 16 March 2016

Welcome!!!



PEDs with Passing

H. Leslie Grebe
Room C-244

https://www.youtube.com/watch?v=Dcol_aU-CIQ

Centering
(animals)

- Show me SchoolView if you want phone in class...

HOMEWORK: Push version of friction problem

Start working: +1

Re-write the block problem as a push

- use all new "given" numbers
- every person's should be different

and/or EdReady turn to BLUE

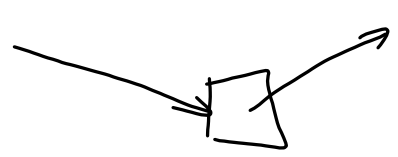
Pg 49, 69
skills
physicsgrebe2

physicsgrebe1 worth +6

physicsgrebe2 worth +2

+2

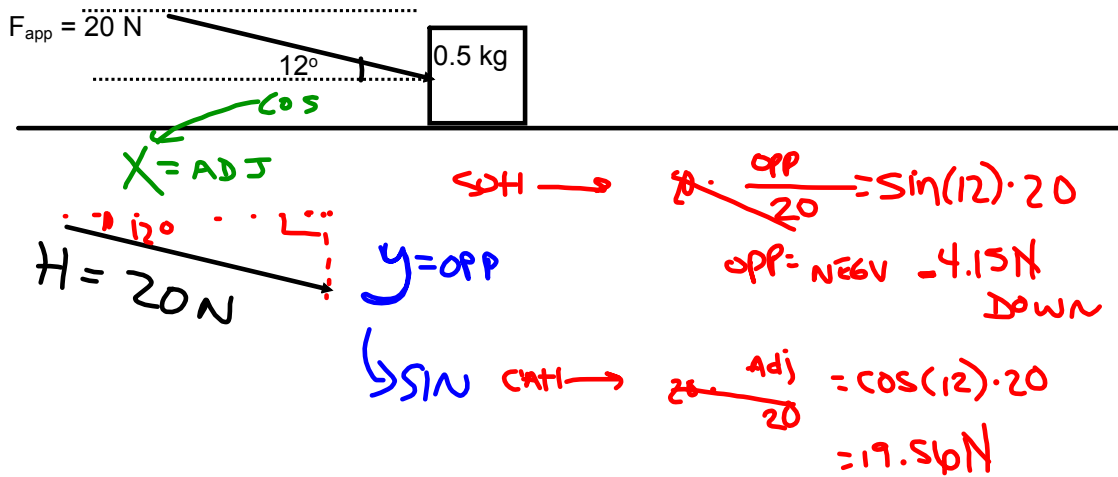
NEED
SOMETHING



Sep 7-7:04 AM

Pg 49, 69, physicsgrebe2

If I push on a block like in this diagram, what are the x & y components of that force?



Mar 16-7:56 AM

What we should have solid:

Memorize our ~~5~~⁸ vocab cards, units, vector or not, definition, formula

Be able to answer distance vs displacement questions

Be able to make measurements of real-life motion. Know what is likely to make timing things difficult and how to get more reliable timing results

Be able to convert between miles and meters, between hours, minutes, and seconds

Be able to calculate speed = dist/time and velocity = disp/time

Know what all of the symbols in the UAM equations stand for and mean

Be able to turn a UAM word problem into a list of knowns and unknowns

Be able to pick the equation with those 4 things in it

Be able to put the knowns into that equation

(Be able to solve for the unknown)

→ PROJECTILES: V_x IS CONSTANT; $a_y = -9.81 \text{ m/s}^2$ ^{V_y CHANGES} PG 42

PG 43 TIME, Δt , CONNECTS x & y

PG 49 VECTORS INTO x & y , ADD VECTORS
~~SOH-CAH-TOA~~

PG 59 DIFFERENCE BETWEEN MASS & WEIGHT

PG 61 NET FORCE

PG 63 FREE BODY DIAGRAMS

$$\boxed{F = m \cdot a}$$

PG 70 $F_f = \mu \cdot N$

QW every day to review - gather responses to front board.

Dec 4-9:15 AM

InterActive Notebook - Table of Contents			
Unit	Chapters	Date	
Left-Side Items	Page	Right-Side Items	Page
REFLECTION ON NOTES	2	SEP ED ADAM SWAGE	3
HOW FAR FROM BRIDGE	4	"FORT STUEBEN"	5
REFLECTION ON NOTES	6	HAWK: BASIC UNITS	7
PR: DISTANCE & DISPLACEMENT	8	HAWK: FP DISPLACEMENT	9
DIAGRAM & STEPS	10	TIMING & ERROR	11
SUMMARY OF TIMING	12	HOW TO BUILD A TABLE	13
PR: CONVERTING UNITS	14	HAWK: FP CONVERSIONS	15
PR: VELOCITY & SPEED	16	HAWK: FP SPEED & VELOCITY	17
SPEED WORD PROBLEMS	18	ALGEBRA FOR PHYSICS	19
LAB JOURNAL 10/7	20	LAB JOURNAL 10/8	21
		HAWK: FP GRAPHS POSITION	23
LAB JOURNAL 10/12	24	EXPERIMENT RUBRIC	25
26	USE FOR PROJECT	27	
OBSERVATIONS OF ORK	28	FP: INTRO TO ACC.	29
REVIEW FOR TEST	30	BALL ON RAMP	31
VECTORS, DIRECTION	32	FP: BASIC ACC EXAMPLE	33
PRACTICE UAM	34	FP: INTRO TO UAM	35
FALLING OBJECTS PACKET	36	FP: INTRO TO FREEFALL	37
MY FREE FALL WORD PROBLEM	38	3-ACT FALLING GLOWSTICK	39
Toy popper experiment	40	Free fall class solutions	41
Launched vs. Dropped	42	FP: INTRO TO PROJECTILE MOTION	43
PROJECTILE SIMULATOR	44	FP: PROJ. MOTION PROBLEM	45
PROJ'L PRACTICE PROBS.	46	PROJECTILES PRACTICE	47
OUR VECTOR PRACTICE	48	FP - VECTOR COMPONENTS	49
VECTOR PACKET	50	NOTES ON ADDING VECTORS	51
MEASURE LAUNCHER	52	NOTES ON FINDING μ & θ	53
OBSERVATIONS OF ORBITS	54	RULES OF PHYSICS NOTES	55
NEWTON'S 1ST LAW	58	CONFUSING QUANTITIES	59
WKSHT: 2-1	60	NET FORCE	61
PHET FORCES IN 1d			
PACKET: F.B.D.	62	FREE-BODY DIAGRAMS	63
DATA/MEASURING CART	64	FINDING FRICTION ON CART	65
MORE PROJECT?	66	MYTHBUSTERS	67
VECTOR ADDITION BY COMPONENTS	68	VECTOR EXAMPLE	69
PHET RAMP-SLIDING	70	NORMAL VS. GRAVITY	71
2ND LAW WORKSHEET	72	FP: 2ND LAW NOTES	73

Sep 5-9:09 AM

Pg 73?

Youtube: "AP Physics 1: Forces 12: Static & Kinetic Friction"

(from 7:30 to the end)

→ FOUND F_{FRIC} STATIC $\mu_s \cdot N$

→ FOUND F_{FRIC} KINETIC $\mu_k \cdot N$



BALANCED:

$$W = N$$

$$W = m \cdot g = N$$

$\Sigma \Rightarrow$ SUM
SIGMA

$$F_{\text{NET}} \text{ SIDEWAYS} = m \cdot a$$

Mar 11-8:27 AM

Putting it all together...

Diagram: A block of mass $m = 1.0 \text{ kg}$ is on a horizontal surface. A force $F = 20 \text{ N}$ is applied at an angle of 15° to the horizontal. The coefficient of friction is $\mu = 0.2$.

a) Free-body diagram showing forces: $F_{\text{norm}} = N$ (up), $F_{\text{app}} = 20 \text{ N}$ (up and right), F_{fric} (left), $F_{\text{grav}} = W$ (down).

b) Force components: $20 \text{ N} \cos 15^\circ = F_x$, $20 \text{ N} \sin 15^\circ = F_y$.

c) Calculations: $F_x = 19.3 \text{ N}$, $F_y = 5.2 \text{ N}$.

d) BALANCED FORCES $\sum F = 0$

$$5.2 \text{ N} + F_{\text{norm}} - F_{\text{grav}} = 0$$

$$5.2 \text{ N} + F_{\text{norm}} - (1.0 \text{ kg})(9.81 \text{ m/s}^2) = 0$$

$$5.2 \text{ N} - 9.81 \text{ N} + F_{\text{norm}} = 0$$

$$-4.61 \text{ N} + F_{\text{norm}} = 0$$

$$F_{\text{norm}} = 4.61 \text{ N UP}$$

e) Friction: $F_{\text{fric}} = \mu \cdot F_{\text{norm}} = 0.2 \cdot 4.61 \text{ N} = 0.922 \text{ N LEFT}$

f) $\sum F_x = m \cdot a_x$

$$F_{\text{appx}} - F_{\text{fric}} = m \cdot a_x$$

$$19.3 \text{ N} - 0.922 \text{ N} = 1.0 \text{ kg} \cdot a_x$$

Mar 14-7:43 AM